UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,186	01/22/2002	Geoffrey Mattson	125-001	4459

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/054,186	MATTSON, GEOFFREY
	Examiner	Art Unit
	Kevin Bates	2155

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 July 2007*.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All   b)☐ Some *   c)☐ None of:

　　　　1.☐ Certified copies of the priority documents have been received.

　　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

U.S. Patent and Trademark Office

PTOL-326 (Rev. 08-06)   Office Action Summary   Part of Paper No./Mail Date 20070808

Response to Amendment

This Office Action is in response to a communication made on March 7, 2007.

Claims 1, 2, and 14-15 have been amended.

Claims 1 – 26 are currently pending in the application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by

Ginjpalli (7120151).

Regarding claims 1 and 14, Ginjpalli teaches a method of providing backup

resources for a primary label switched path (LSP) in a label switching network (Figure

7), the primary LSP having at least a portion for transmitting data packets containing a

label stack from a first label switching node to a second label switching node, said

portion including at least one intermediate label switching node between the first and

second nodes (Column 2, lines 62 – 65), the method comprising the steps of:

defining at least one backup LSP starting from the first node and merged with the

primary LSP at the second node (Column 5, lines 5 – 7);

determining a transformation of the label stack of a packet transmitted along said

portion of the primary LSP from an output of the first node to an input of the second

node (Column 5, lines 19 – 24) the transformation including label stack manipulations

performed by the at least one intermediate label switching node (Figure 7, where node

110 is an immediate node between node 100 and 125 and it performs the

transformation);

configuring the first node to switch a packet to the backup LSP upon detection of

a failure in said portion of the primary LSP (Column 5, lines 15 – 19); and

configuring at least one node of the backup LSP to process the label stack of any

packet transmitted along the backup LSP to apply the same transformation as said

transformation of the label stack on the backup LSP as applied on said portion of the

primary LSP (Column 5, lines 25 – 31) so that the label stack received from the backup

LSP at an input to the second label switching node corresponds to the label stack

received from the portion of the primary LSP at the input of the second label switching

node (Column 5, lines 30 – 31).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Lee (6904018) in view of Ginjpalli (7120151).

Regarding claims 1 and 14, Lee teaches a method of providing backup

resources for a primary label switched path (LSP) in a label switching network (Column

2, lines 64 – 67), the primary LSP having at least a portion for transmitting data packets

containing a label from a first label switching node to a second label switching node

(Column 1, lines 21 – 25), said portion including at least one intermediate label

switching node between the first and second nodes (Figure 3, elements LSR2-15), the

method comprising the steps of:

defining at least one backup LSP starting from the first node and merged with the

primary LSP at the second node (Column 3, lines 43 – 46);

determining a transformation of the label of a packet transmitted along said

portion of the primary LSP from an output of the first node to an input of the second

node <u>the transformation including label stack manipulations performed by the at least</u>

<u>one intermediate label switching node </u>(Column 1, lines 27 – 31);

configuring the first node to switch a packet to the backup LSP upon detection of

a failure in said portion of the primary LSP (Column 4, lines 50 – 61); and

configuring at least one node of the backup LSP to process the label of any

packet transmitted along the backup LSP (Figure 4, "looked back traffic flow after

failure) so as to apply the same transformation as said transformation of the label of a

packet transmitted along said portion of the primary LSP from an output of the first node

to an input of the second node (Column 1, lines 27 – 31).

Lee does not explicitly indicate that the packet has a label stack on which to push and pull labels from, just swaping the values of labels and that the transformation to the label stack is applied so that the label stack received from the backup LSP at an input to the second label switching node corresponds to the label stack received from the portion of the primary LSP at the input of the second label switching node.

Ginjpalli teaches a label switching network that uses a label stack (Column 2, lines 62 – 65) and provides a backup LSP which includes a transformation to the label stack so that the label stack received from the backup LSP at an input to the second label switching node corresponds to the label stack received from the portion of the primary LSP at the input of the second label switching node (Column 5, lines 30 – 31)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Ginjpalli's teaching of label stacks and label stack transformations in Lee's system in order to quickly recover from node failure with little delay and only slight label stack modification.

Regarding claims 2 and 15, Lee teaches a method as claimed in claims 1 and 14 respectively, wherein the node of the backup LSP configured to apply the transformation is the first node, said transformation being applied prior to pushing a label of the backup LSP (Column 2, lines 13 – 18; see also Ginjapalli, Column 5, lines 25 – 27) and including at least one of a label swapping and a label popping manipulation (Column 1, lines 27 – 31).

Regarding claims 3 and 16, Lee teaches a method as claimed in claims 1 and 14 respectively, wherein the node of the backup LSP configured to apply the

transformation is the second node (Figure 3, LSR8, wherein LSR8 is show to allow the transformation of the label stack to send the packets along a backup LSP; see also Ginjapalli, Column 5, lines 25 - 27).

Regarding claims 4 and 17, Lee teaches a method as claimed in claims 1 and 14 respectively wherein the step of determining the transformation of the label stack comprises transmitting messages of a signaling protocol between the nodes of said portion of the primary LSP (Column 4, lines 42 – 56), including indications of label stack manipulations performed by said nodes on packets transmitted along the primary LSP, said indications being processed at one of the first and second nodes for deriving said transformation (Column 4, lines 47 – 49).

Regarding claims 5 and 18, Lee teaches a method as claimed in claims 1 and 14 respectively, wherein the step of determining the transformation of the label stack comprises transmitting at least one sample packet from the first node to the second node along said portion of the primary LSP (Column 4, lines 42 – 56).

Regarding claims 6 and 19, Lee teaches a method as claimed in claims 1 and 14 respectively, wherein the first node is configured to switch a packet intended for the primary LSP to the backup LSP upon detection of a failure in said portion of the primary LSP up to the intermediate node situated next to the first node (Column 4, lines 50 – 61).

Regarding claims 7 and 20, Lee teaches a method as claimed in claims 1 and 14 respectively, further comprising the steps of: defining at least one switchback LSP from an intermediate node of the primary LSP to the first node (Column 4, lines 16 –

22); and configuring said intermediate node to switch a packet to the switchback LSP

upon detection of a failure in said portion of the primary LSP downstream of said

intermediate node and up to the node situated next to said intermediate node (Column

4, lines 16 – 22).

Regarding claim 8 and 21, Lee teaches a method as claimed in claims 7 and

20, respectively, further comprising the step of configuring the first node to switch to the

backup LSP any packet received on the switchback LSP (Figure 3, the looped back

traffic flow starting at node LSR 6 and travels to first node LSR 9 and 1, and travels

along the backup LSP).

Regarding claims 9 and 22, Lee teaches a method as claimed in claims 8 and

20, further comprising the steps of: determining a second transformation of the label

stack as the inverse of a transformation of the label stack of a packet transmitted along

said portion of the primary LSP from the output of the first node to said intermediate

node; and configuring at least one node of the switchback LSP to process the label

stack of any packet transmitted from said intermediate node along the switchback LSP

so as to apply said second transformation (Figure 3, for the immediate nodes changing

the labels to push the traffic flow back to the ingress nodes and down the back up LSP).

Regarding claims 10 and 23, Lee teaches a method as claimed in claims 9 and

22, wherein the node of the switchback LSP configured to apply the second

transformation is said intermediate node, the second transformation being applied prior

to pushing a label of the switchback LSP (Figure 3, for the immediate nodes changing

the labels to push the traffic flow back to the ingress nodes and down the back up LSP).

Regarding claims 11 and 24, Lee teaches a method as claimed in claims 10

and 23, wherein the primary LSP has at least one additional intermediate node between

the first node and said intermediate node, wherein the switchback LSP is defined to

comprise the nodes of the primary LSP, in a reverse direction, from said intermediate

node to the first node (Figure 3, for the immediate nodes changing the labels to push

the traffic flow back to the ingress nodes and down the back up LSP).

Regarding claims 12 and 25, Lee teaches a method as claimed in claims 11

and 24, further comprising the step of configuring said additional intermediate node to

switch a packet to the switchback LSP upon detection of a failure in said portion of the

primary LSP downstream of said additional intermediate node and up to the node

situated next to said additional intermediate node (Column 4, lines 42 – 56).

Regarding claims 13 and 26, Lee discloses a method as claimed in claims 12

and 25, further comprising the steps of: determining a third transformation of the label

stack as the inverse of a transformation of the label stack of a packet transmitted along

said portion of the primary LSP from the output of the first node to said additional

intermediate node; and configuring said additional intermediate node to process the

label stack of any packet that it switches to the switchback LSP so as to apply said

inverse transformation prior to pushing a label of the switchback LSP (Figure 3, for the

immediate nodes each having to change the labels to push the traffic flow back to the

ingress nodes and down the back up LSP).

Response to Arguments

Applicant's arguments filed June 7, 2007 have been fully considered but they are

not persuasive.

The applicant argues that the reference, Ginjpalli, does not teach an intermediate

node between the node 110 and 115 in the 'primary' path of Ginjpalli. The examiner

disagrees, the invention as claimed discusses a first and second node with at least one

intermediate node in between and that the transformation is performed by at lest one

intermediate label switching node. This is precisely what is occurring in Ginjpalli, as

seen in Figure 7, the path in Ginjpalli teaches a primary path between node 100 and

node 125. Within this primary path there is an intermediate node 110. That

intermediate node is performing a stack transformation on the packets in order to travel

along a backup path, node 130. So as shown node 110 and 115 do not specifically

need to be considered the first and second node, especially when the claim discusses

an intermediate node performing some packet transformation.

The applicant argues that the combination of Lee and Ginjapalli does not teach

the claimed invention nor is there motivation to combine the references. The examiner

disagrees, Lee teaches a label swapping network which does not have a label stack.

Lee includes the teaching of having a back-up path that the packets can traverse if

there is a failed link, see Figure 3. As part of this teaching, Lee discloses both LSR9

and LSR ingress nodes start swapping a different label after a failure occurs in order to

send packets along the back up path, including LSR 5 and LSR 7 instead of the primary

path. Ginjpalli teaches a system for handling failure in a label switching network. As

part of Ginjpalli's system is that the packets contain label stacks for routing along the

network (Column 2, lines 62 – 65). As part of that label stack, when dealing having to move packets along a backup path the label stack also needs altered in order to get the packet off the primary path and onto the back up path (Column 5, lines 5 – 11). Ginjpalli teaches it is important to return the label stack upon returning to the primary path to the state it would have been if there had been no backup path (Column 5, lines 20 – 27). The combination of the teachings of Lee and Ginjpalli would allow one to have the network of Lee while replacing Lee's label swapping with the label stack taught in Ginjpalli. The motivation of using Ginjpalli comes from the benefits of having a label stack instead of having each node programmed to perform label swapping at each node. Having the label stack in the packet removes the decision making and processing from each node and only allows them to have to pop a label off the stack and just use that label to forward the packet. That would require less processing per node in the network, speeding up the network throughput.
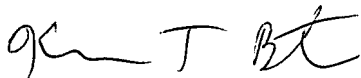
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Bates whose telephone number is (571) 272-3980. The examiner can normally be reached on 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar can be reached on (571) 272-4006. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Bates
August 8, 2007